



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/838,490	04/19/2001	Kazuyoshi Takeda	P5970a	8914

20178 7590 02/10/2005

EPSON RESEARCH AND DEVELOPMENT INC  
INTELLECTUAL PROPERTY DEPT  
150 RIVER OAKS PARKWAY, SUITE 225  
SAN JOSE, CA 95134

EXAMINER

PROCTOR, JASON SCOTT

ART UNIT

PAPER NUMBER

2123

DATE MAILED: 02/10/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	09/838,490	TAKEDA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Jason Proctor	2123	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
 THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

1) Responsive to communication(s) filed on 03 November 2004.  
 2a) This action is **FINAL**.                            2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

4) Claim(s) 1-16 is/are pending in the application.  
 4a) Of the above claim(s) 1-5 is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 6-16 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on 03 November 2004 is/are: a) accepted or b) objected to by the Examiner.  
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.	5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
	6) <input type="checkbox"/> Other: _____.

**DETAILED ACTION**

1. Claims 1-5 have been canceled. Claims 6-16 have been presented for reconsideration in view of Applicant's amended claim language and arguments.
2. Claims 6-16 have been rejected.

***Response to Arguments***

The arguments submitted by the Applicant on November 3, 2004 have been fully considered. The Examiner's response is as follows.

Regarding Applicant's response to the Examiner's objections to the disclosure: The Examiner thanks the Applicant for amending the specification and drawings.

***35 USC § 112***

Regarding Applicant's response to the Examiner's rejections under 35 U.S.C. § 112:

The Examiner thanks the Applicant for amending the claims to address these issues.

***35 USC § 102***

Regarding Applicant's response to the rejections under 35 U.S.C. § 102 of claims 6-16, Applicant argued:

As recited in independent claim 6, which has been amended to emphasize the interaction between the evaluator and simulator components, automated evaluation of an application program is performed efficiently without the need for an interface or test system device.

3. The Examiner respectfully traverses the Applicant's arguments based on the following remarks.

4. Although Applicant argues that the claimed invention performs efficiently without the need for an interface or test system device, such a limitation is not recited in claims 6-7 or 12-16. In fact, claim 6 broadly recites that the evaluator *transmits* event data and the simulator *receives* data. While it is true that such terminology does not necessarily indicate communication means between two computer system and Applicant argues that the claimed invention does not require an interface, the specification (paragraphs 00054-00055) reads as follows:

For example, API commands and the RAM 10 are used such that the automated evaluate system and the simulation apparatus can communicate with each other. However, other devices/functions can be used to facilitate such communication.

Also, the automated evaluation system and the simulator are composed on the same personal computer. However, they can be composed on other electronic processors such as workstations.

The limitations of claims 6 and 16 do not specifically restrict these embodiments, but rather correlate to the various embodiments covered by paragraphs 00054-00055. For example, a serial communications port, as used by Tuttle, teaches "other devices/functions" that "facilitate communication". The Tuttle reference teaches an evaluator (host computer) and a simulator (SUT) composed on "other electronic processors such as workstations". The Examiner fails to find limitations in claims 6-7 and 12-16 such that the claimed invention is limited to an embodiment where the evaluator and the simulator communicate "without the need for an interface or test system device".

5. Applicant further argues:

In applicants' claimed system, the application program to be evaluated by automated evaluation is the same as the application program that is to be actually implemented. Therefore, no automated evaluation system interface program IP is needed, thereby eliminating unnecessary functions that may introduce unstable factors and compromise the evaluation process.

The Examiner does not agree with Applicant's inference that the presence of Tuttle's interface program IP means that the application program to be evaluated is not the same as it would be actually implemented. Tuttle teaches that the input data is emulated such that it appears to the SUT that the input data is being entered into the SUT directly (column 9, lines 14-24). Tuttle specifically teaches that modifying the application program is a deficiency of the prior art at column 2, lines 45-52:

In addition to the above-mentioned systems, attempts at applying software patches or modifying the software application itself to create performance measurement data were unsuccessful, since this changed the normal behavior of the software application in unpredictable ways. These behavior changes often prohibited accurate performance measurements of the application software.

At no point does Tuttle teach modifying the application being tested.

Further, inasmuch as Applicant's invention does not introduce unstable factors and compromise the evaluation process, the Examiner must remark that where Applicant's invention executes the evaluation unit on the same architecture as the simulation, the evaluator and simulator must compete for resources at least including processing time and memory space (paragraph 00048). The evaluator also manipulates the simulator's memory space through the use of API commands (paragraph 00052). As Applicant describes this relationship as not introducing unstable factors or compromising the evaluation process, it is the Examiner's interpretation that by the same reasoning, the invention disclosed by Tuttle does not introduce unstable factors or compromise the evaluation process.

The Examiner has found Applicant's arguments to be unpersuasive and upholds the earlier 35 U.S.C. §102 rejections of claims 6-7 and 12-16.

Applicant has amended claim 6 to emphasize the interaction between the evaluator and simulator components. Applicant argues that claim 16 is similar in scope to claim 6. The amended emphasis has narrowed the scope of claims 6-16. Specifically, the limitation that "a determination is made as to whether each simulation result is substantially the same as the corresponding reference output result to thereby perform an automated evaluation of the application program with respect to the corresponding input event" is clearly narrower in scope than the previous limitation of "to thereby perform an automated evaluation of the application program".

***Claim Rejections - 35 USC § 112***

6. The following is a quotation of the second paragraph of 35 U.S.C. § 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.
7. Claims 6-16 are rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The term "substantially the same" in claims 6 and 16 is a relative term which renders the claim indefinite. The term "substantially" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. There are no criteria given for determining how similar the reference and simulation result must be in order to teach this limitation. When comparing the claimed

invention to prior art, it is impossible to determine whether the determinations made in the prior art satisfies the recited limitation.

Claims rejected but not specifically mentioned stand rejected by virtue of their dependence.

***Claim Interpretation***

8. Regarding claims 6 and 16, the limitations are interpreted without the word "substantially".

***Claim Rejections - 35 USC § 102***

9. The following is a quotation of the appropriate paragraphs of 35 U.S.C. §102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

10. Claims 6-16 are rejected under 35 U.S.C. §102(b) as being anticipated by Tuttle et al, US Patent No. 5,157,782 hereafter referred to as Tuttle.

11. Regarding Claim 6, Tuttle discloses a system and method for testing computer hardware and software wherein

a host computer stores input data (column 6, lines 1-6) in the form of input events (column 6, lines 55-59; column 33, lines 12-18),  
stores corresponding stored signatures (column 6, lines 31-36; column 29, lines 58-60).

transmits said input events (column 6, lines 24-30), to a Digital Video Signal Processing Unit (DVPU) (column 5, lines 62-64) including an emulator (column 11, lines 11-15; column 23, lines 36-50) which receives the input events (column 6, lines 24-26), emulates the input events on the system under test (column 9, lines 15-24; column 28, lines 36-44), and comparisons are made between the stored signature and the result of the emulated input events on the system under test to validate the results of the emulated event (column 6, lines 36-41; column 8, lines 1-7; column 9, lines 53-55)

It is deemed inherent that a computer system which transmits the contents of a file or performs comparisons based on their data must read the file.

Tuttle teaches that the host may be a UNIX system (column 33, lines 48-60) connected to the DVPU by a RS232 serial data communications port (column 28, lines 53-59). The UNIX operating system provides access to serial ports via device files. A program can communicate across a serial port by opening the device file and reading or writing to it, all supported through the use of operating system commands. (See Chapter 4 of Linux Network Administrator's Guide, enclosed). It is therefore deemed inherent that communication in a UNIX system across a RS232 serial data communications port can be done through operating system commands.

Tuttle discloses that the stored signatures are emulation results trusted to be valid and used at a later time to validate signatures generated in response to emulated input events (column 6, lines 11-16; column 6, lines 36-41).

12. Regarding Claim 7, Tuttle discloses that the DVPU includes a System Under Test Interface Port (SIF) (column 11, lines 11-15). The SIF includes a memory (column 13, line 61-column 14, line 3) or is realized using system memory of the system under test (column 25, lines 31-32). The SIF operates as a series of input/output ports between the host and system under test (column 26, lines 42-55). The SIF includes TX DATA and RX DATA registers (column 26, lines 56-59) which comprise the communication path between the host and the DVPU within the system under test (column 27, lines 2-4). The DVPU communicates with the host using an industry standard RS232 serial data communications (column 28, lines 53-59). Thus the SIF includes memory that is accessible to both the emulator of the DVPU and the validator on the host.

13. Regarding Claim 12, Tuttle discloses

the use of an test script file (column 7, lines 19-30) which contains the input data for each input event to be emulated, and  
generating the signatures that correspond to the input events and storing said signatures in a signature file (column 7, lines 41-44).

Tuttle does not explicitly teach the generation of a signature file to correspond to each input event but this can be achieved trivially by commanding

the DVPU to capture the visual display after each input event is recorded (column 6, lines 11-16; column 6, lines 31-36; column 9, column 7, lines 31-38).

14. Regarding Claim 13, Tuttle discloses that the data stored in the test script files is composite data (column 7, lines 23-24), composite data consisting of input data, DVPU/Host commands, and comments (column 6, lines 64-66). Also, when the take-signature command is stored in the test script file, a command marker is stored with it (column 34, lines 58-64). Tuttle also discloses the practice of inserting comment and title data into the test script file (column 31, lines 51-59).

15. Regarding Claim 14, Tuttle discloses that the most prevalent signature among several be stored in the signature file. The frequency of stored signatures can be set by the user (column 30, lines 30-35). The presence or omission of a given signature in the signature file is a data element relating to the frequency with which it occurs as an emulated result. Additionally, storing a take-signature command marker in the test script file is intended to identify which take-signature command may have caused an error and in this way is identifying data corresponding to each signature stored in the signature file (column 34, lines 58-64).

16. Regarding Claim 15, Tuttle discloses that upon detecting an error, the host user receives an indication that an error has occurred (column 8, lines 6-7). Further, the user records input events using a keyboard, mouse, or other pointer device (column 33, lines 13-18) attached to the host computer (column 3, lines 33-35). It is therefore deemed inherent that the host system must have a means of display to notify the user of errors and to facilitate recording input events generated by a keyboard or mouse.

17. Regarding Claim 16, Tuttle discloses a method for evaluation a program comprising the steps of:

reading input events from a test script file (column 35, lines 6=12),

reading corresponding reference results from a signature file (column 35, lines 28-34),

emulating the input events (column 35, 23-28; column 28, lines 36-40),

comparing the resulting signatures with the reference result (column 35, lines 34-38),

performs an automated validation of the program based on the comparison between the signature and reference result (column 32, lines 23-29)

It is deemed inherent that a computer system which transmits the contents of a file or performs comparisons based on their data must read the file.

18. Claims 6-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Triantafyllos et al. US Patent No. 5,233,611 hereafter referred to as Triantafyllos.

19. Regarding claim 6, Triantafyllos teaches a computer system that utilizes a single computer to test the operability of an application which also runs on the same computer (column 2, lines 39-61) comprising:

An evaluator, referred to as a *automated function test program* (column 3, lines 39-68), that reads event data for each input event and reference data for each corresponding reference output result, referred to as a *test case* (column 3, lines 39-68), and transmits data for each input event, referred to as *sending*

*keystrokes* (column 3, lines 39-68). Inherent is the transmission in response to an operating system command, especially in light of the teaching that the evaluator and simulator share memory (column 10, line 49 – column 11, line 7). Controlling access to memory allocated to other processes is an extremely well known function of modern operating systems. The IEEE 100 Authoritative Dictionary of IEEE Standards Terms defines “test case” as “A set of test inputs, execution conditions, and *expected results* developed for a particular objective, such as to exercise a particular program path or to verify compliance with a specific requirement”.

A simulator, referred to as *communication program*, that receives event data for each input event from the evaluator (column 4, lines 20-29), simulates an operation of the application program based on the event data for each input, referred to as *transmitted to application* (column 4, lines 20-29) and *application reads and processes the keystroke to yield screen data* (column 9, line 56 – column 10, line 3), and outputs a corresponding simulation result in the form of simulation data for each input event, referred to as *application program’s screen data* (column 4, lines 30-39).

Wherein the simulation data for each simulation result is compared with the reference data for the corresponding reference output result and a determination is made as to whether each simulation result is the same as the corresponding reference output result to thereby perform an automated evaluation of the

application program with respect to the corresponding input event (column 10, lines 4-48).

20. Regarding claim 7, Triantafyllos teaches a memory that is accessible to both the evaluator and the simulator, wherein the simulator outputs each simulation result to the memory (column 4, lines 30-39; column 10, lines 4-48).

21. Regarding claim 8, Triantafyllos teaches that the evaluator and simulator are embodied in a single computer (column 2, lines 39-61; column 3, lines 39-68).

22. Regarding claim 9, Triantafyllos teaches that the evaluator is an *automated function test program* (column 3, lines 39-68). It is inherent that a program, in the context of a computer-implemented invention, is a program of instructions executable by the computer.

23. Regarding claim 10, Triantafyllos teaches that the evaluator and simulator communicate via shared memory (column 4, lines 30-39; column 10, lines 4-48). Controlling access to memory allocated to other processes is an extremely well known function of modern operating systems. It is therefore inherent that the invention disclosed by Triantafyllos accesses the shared memory using an application programming interface.

24. Regarding claim 11, Triantafyllos teaches that the evaluator and simulator communicate through the OS/2 operating system and functionality provided thereby (column 4, lines 1-29).

25. Regarding claims 12-14, Triantafyllos teaches that a test case is read to obtain the input events and corresponding reference data (column 3, lines 40-68). The IEEE

100 Authoritative Dictionary of IEEE Standards Terms defines “test case” as “A set of test inputs, execution conditions, and *expected results* developed for a particular objective, such as to exercise a particular program path or to verify compliance with a specific requirement”.

26. Regarding claim 15, Triantafyllos teaches that the system comprises a display upon which the simulation result and reference result are displayed, referred to as *program being tested* and *test case* respectively (Fig. 1, reference 43; column 4, lines 30-39).

27. Claim 16 recites the method performed by the system recited by claim 1 and is rejected for the same reasons given above for claim 1 as anticipated by Triantafyllos.

### ***Conclusion***

28. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

Art Unit: 2123

the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Art considered pertinent by the examiner but not applied has been cited on form PTO-892.

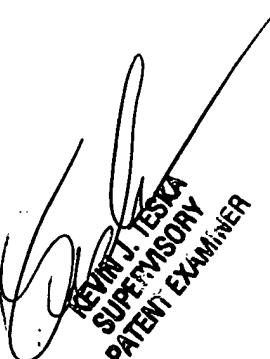
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Proctor whose telephone number is (571) 272-3713. The examiner can normally be reached on 8:30 am-4:30 pm M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kevin J Teska can be reached on (571) 272-3716. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
jsp

Jason Proctor  
Examiner  
Art Unit 2123

  
KEVIN J. TESKA  
SUPERVISORY  
PATENT EXAMINER